

AMANA -- 10/820,148
 Client/Matter: 061069-0309151

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An image forming optical system comprising, in order from an object side;
 a first lens which is a meniscus lens having positive refractive power and a convex surface directed toward an object side;
 an aperture stop;
 a second lens which is a meniscus lens having positive refractive power and a convex surface directed toward an image ~~the object~~ side; and
 a third lens having negative refractive power,
wherein the aperture stop is arranged adjacent to the first lens, the second lens is arranged adjacent to the aperture stop, and the third lens is arranged adjacent to the second lens.

2. (Currently Amended) An image forming ~~imaging~~ optical system according to claim 1, wherein at least one of surfaces of the third lens is aspherical and the following condition is satisfied:

$$-2.0 < \Phi_m/\Phi_p < 0$$
 where Φ_m represents the power of the third lens at the position of the maximum light height and Φ_p represents the power of the third lens at the position of the near axis.

3 (Currently Amended) An image forming ~~imaging~~ optical system according to claim 1, satisfying the following condition:

$$-2.0 < (r1r+r2f)/(r1r-r2f) < 1.0$$
 where $r1r$ represents the radius of curvature of the first lens at the image side and $r2f$ is the radius of curvature of the second lens at the object side

4. (Currently Amended) An image forming ~~imaging~~ optical system according to claim 1, satisfying the following condition:

$$0.1 < r1f/f < 1.0$$

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where $r1f$ represents the radius of curvature of the first lens at the object side and f is the focal length of the whole image forming optical system.

5. (Currently Amended) An image forming ~~imaging~~ optical system according to claim 1, satisfying the following conditions:

$$0.2 < f12/|f3| < 1.5$$

$$0.5 < f/|f3| < 2.0$$

where $f12$ represents total focal length of the first lens and the second lens, $f3$ represents the focal length of the third lens and f represents the focal length of the whole optical system.

6. (Currently Amended) An image forming ~~imaging~~ optical system according to claim 1, satisfying the following condition:

$$-5.0 < f1/f23 < 3.0$$

where $f1$ represents the focal length of the first lens and $f23$ represents the total focal length of the second lens and the third lens.

7. (Currently Amended) An image forming ~~imaging~~ optical system according to claim 1, satisfying the following condition:

$$5.0 < (v1 - v3)/(v2 - v3) < 1.5$$

where $v1$ represents the Abbe's number of the first lens, $v2$ represents that of the second lens and $v3$ is that of the third lens.

8. (Currently Amended) An image forming ~~imaging~~ optical system according to claim 1, satisfying the following condition:

$$0.4 < EXP/f < 1.5$$

where EXP represents the distance of the exit pupil from an image plane and f is the whole focal length of the image forming optical system.

9. (Currently Amended) An image forming ~~imaging~~ optical system according to claim 1, satisfying the following condition:

$$0.55(1/\mu m) < Fno/P(\mu m) < 2.10(1/\mu m)$$

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where F_{no} represents the F number fully opened and P represents the pixel pitch of an imaging element which has an imaging plane at the image forming position of the image forming optical system.

10. (Currently Amended) An image forming ~~imaging~~ optical system according to claim 1, satisfying the following condition:

$$0.05 < ML/TL < 0.35$$

where TL represents whole length of the image forming optical system and ML represents the minimum thickness on the axis of a plastic lens constituting the image forming optical system.

11. (Original) An electric device equipped with the image forming optical system of claim 1.

12. (New) An image forming optical system consisting of, in order from an object side:

- a first lens which is meniscus lens having positive refractive power and a convex surface directed toward an object side;

- an aperture stop;

- a second lens which is meniscus lens having positive refractive power and a convex surface directed toward an image side; and

- a third lens having negative refractive power.

13. (New) An image forming optical system comprising, in order from an object side:

- a first lens which is meniscus lens having positive refractive power and a convex surface directed toward an object side;

- an aperture stop;

- a second lens which is meniscus lens having positive refractive power and a convex surface directed toward an image side; and

- a third lens having negative refractive power,

wherein the aperture stop and all lenses are fixedly positioned.

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14. (New) An image forming optical system comprising, in order from an object side:

a first lens which is meniscus lens having positive refractive power and a convex surface directed toward an object side;

an aperture stop;

a second lens which is meniscus lens having positive refractive power and a convex surface directed toward an image side; and

a third lens having negative refractive power,

wherein at least one of surfaces of the third lens is aspherical and the following condition is satisfied:

$$-2.0 < \Phi_m / \Phi_p < 0$$

where Φ_m represents the power of the third lens at the position of the maximum light height and Φ_p represents the power of the third lens at the position of the near axis.

15. (New) An image forming optical system comprising, in order from an object side:

a first lens which is meniscus lens having positive refractive power and a convex surface directed toward an object side;

an aperture stop;

a second lens which is meniscus lens having positive refractive power and a convex surface directed toward an image side; and

a third lens having negative refractive power,

wherein the image forming optical system satisfies the following condition:

$$-2.0 < (r1r+r2f)/(r1r-r2f) < 1.0$$

where $r1r$ represents the radius of curvature of the first lens at the image side and $r2f$ is the radius of curvature of the second lens at the object side.

16. (New) An image forming optical system comprising, in order from an object side:

a first lens which is meniscus lens having positive refractive power and a convex surface directed toward an object side;

an aperture stop;

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a second lens which is meniscus lens having positive refractive power and a convex surface directed toward an image side; and

a third lens having negative refractive power,

wherein the image forming optical system satisfies the following conditions:

$$0.2 < f_{12}/|f_3| < 1.5$$

$$0.5 < f/|f_3| < 2.0$$

where f_{12} represents total focal length of the first lens and the second lens, f_3 represents the focal length of the third lens and f represents the focal length of the whole optical system.

17. (New) An image forming optical system comprising, in order from an object side:

a first lens which is meniscus lens having positive refractive power and a convex surface directed toward an object side;

an aperture stop;

a second lens which is meniscus lens having positive refractive power and a convex surface directed toward an image side; and

a third lens having negative refractive power,

wherein the image forming optical system satisfies the following condition:

$$-5.0 < f_1/f_{23} < 3.0$$

where f_1 represents the focal length of the first lens and f_{23} represents the total focal length of the second lens and the third lens.

18. (New) An image forming optical system comprising, in order from an object side:

a first lens which is meniscus lens having positive refractive power and a convex surface directed toward an object side;

an aperture stop;

a second lens which is a meniscus lens having positive refractive power and a convex surface directed toward an image side; and

a third lens having negative refractive power,

wherein the image forming optical system satisfies the following condition:

$$5.0 < (v_1 - v_3)/(v_2 - v_3) < 15$$

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where v_1 represents the Abbe's number of the first lens, v_2 represents that of the second lens and v_3 is that of the third lens.

19. (New) An image forming optical system comprising, in order from an object side:

a first lens which is a meniscus lens having positive refractive power and a convex surface directed toward an object side;

an aperture stop;

a second lens which is a meniscus lens having positive refractive power and a convex surface directed toward an image side; and

a third lens having negative refractive power,

wherein the image forming optical system satisfies the following condition:

$$0.4 < EXP/f < 1.5$$

where EXP represents the distance of the exit pupil from an image plane and f is the whole focal length of the image forming optical system.

20. (New) An image forming optical system comprising, in order from an object side:

a first lens which is a meniscus lens having positive refractive power and a convex surface directed toward an object side;

an aperture stop;

a second lens which is a meniscus lens having positive refractive power and a convex surface directed toward an image side; and

a third lens having negative refractive power,

wherein the image forming optical system satisfies the following condition:

$$0.55(1/\mu\text{m}) < F_{\text{no}}/P(\mu\text{m}) < 2.10(1/\mu\text{m})$$

where F_{no} represents the F number fully opened and P represents the pixel pitch of an imaging element which has an imaging plane at the image forming position of the image forming optical system.

21. (New) An image forming optical system comprising, in order from an object side:

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a first lens which is a meniscus lens having positive refractive power and a convex surface directed toward an object side;

an aperture stop;

a second lens which is a meniscus lens having positive refractive power and a convex surface directed toward an image side; and

a third lens having negative refractive power,

wherein the image forming optical system satisfies the following condition:

$$0.05 < ML/TL < 0.35$$

where TL represents whole length of the image forming optical system and ML represents the minimum thickness on the axis of a plastic lens constituting the image forming optical system